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[GB/GB]; Amersham Biosciences UK Ltd, The Grove  
Centre, White Lion Road, Amersham, Buckinghamshire  
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(74) Agents: **FRANKS, Barry** et al.; Amersham plc, The  
Grove Centre, White Lion Road, Amersham, Bucking-  
hamshire HP7 9LL (GB).

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(71) Applicant (for all designated States except US): **AMER-  
SHAM BIOSCIENCES UK LIMITED** [GB/GB]; Amer-  
sham Place, Little Chalfont, Buckinghamshire HP7 9LL  
(GB).

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(72) Inventors; and

(75) Inventors/Applicants (for US only): **WILLIAMS, Karen**  
[GB/GB]; Amersham Biosciences UK Limited, The Grove  
Centre, White Lion Road, Amersham, Buckinghamshire  
HP7 9LL (GB). **STONE, Timothy** [GB/GB]; Amersham  
Biosciences UK Ltd, The Grove Centre, White Lion  
Road, Amersham, Buckinghamshire HP7 9LL (GB). **SIM-  
MONDS, Adrian, Christopher** [GB/GB]; Amersham  
Biosciences UK Ltd, The Grove Centre, White Lion Road,  
Amersham, Buckinghamshire HP7 9LL (GB). **SWEET,  
Alison, Claire** [GB/GB]; Amersham Biosciences UK Ltd,  
The Grove Centre, White Lion Road, Amersham, Buck-  
inghamshire HP7 9LL (GB). **FOWLER, Susan, Janet**



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(54) Title: REAGENTS AND A METHOD FOR SATURATION LABELLING OF PROTEINS

(57) **Abstract:** A matched set of fluorescent dyes is provided, wherein each dye of the set is capable of covalent attachment to a protein and wherein each of the dyes has a molecular structure and a charge that is matched one with the other, such that relative electrophoretic mobility of a protein labelled with one dye of the set is the same as the electrophoretic mobility of the protein labelled with a different dye of the set. The matched set comprises at least two different fluorescent dyes of formula: wherein n is 1, 2, or 3; Z1 and Z2 independently represent the carbon atoms necessary to complete a phenyl or naphthyl ring system; one of groups R1 and R2 is a target bonding group; remaining group R1 or R2 is selected from -(CH2)<sup>n</sup>-W or -(CH2)<sup>n</sup>-H; group R3 is hydrogen, except when either R1 or R2 is -(CH2)<sup>n</sup>-H, in which case R3 is W; and W is selected from sulphonic acid and sulphonate. The invention also provides a method for saturation labelling of a protein with a fluorescent dye so as to label all available target amino acid, suitably cysteine, residues in the protein, thereby giving a single population of labelled protein molecules.